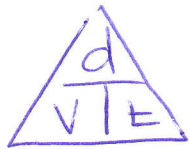


Dvt Problems



$$t = \frac{d}{v} \quad d = v \times t$$

1)

	distance	Velocity	time
bus	40x	40	x
plane	600y	600	y
	1320	X	5

$$\textcircled{1} \quad 40x + 600y = 1320$$

$$[x + y = 5] \times 40$$

$$\textcircled{2} \quad 40x + 40y = 200$$

$$\begin{array}{r} 560y = 1120 \\ \hline 560 \quad 560 \end{array}$$

$$y = 2$$

Sub $y = 2$ into $\textcircled{2}$

$$x + y = 5$$

$$x + 2 = 5$$

$$x = 5 - 2$$

$$x = 3$$

\therefore they spent 2h traveling by plane.

a)

$$\textcircled{1} \quad 6x + 6y = 264 \quad \text{total distance}$$

$$\textcircled{2} \quad y = x + 4 \quad (\text{speed})$$

	distance	speed	time
boat A	6x	x	6
boat B	6y	$y = x + 4$	6
total	264	X	6

Sub $y = x + 4$ into $\textcircled{1}$

$$6x + 6y = 264$$

$$6x + 6(x + 4) = 264$$

$$6x + 6x + 24 = 264$$

$$12x = 264 - 24$$

$$\frac{12x}{12} = \frac{240}{12}$$

$$x = 20$$

Sub $x = 20$ into $\textcircled{2}$

$$y = 20 + 4$$

$$y = 24$$



$$d = v \times t$$

\therefore boat A travels at 20km/h and boat B travels at 24km/h

#3

	d	s	t
land	x	40	$\frac{x}{40}$
water	y	10	$\frac{y}{10}$
total	185		5.75



$$\textcircled{1} \quad x + y = 185$$

$$\textcircled{2} \quad \left[\frac{x}{40} + \frac{y}{10} = 5.75 \right] \times 40$$

$$\textcircled{2} \text{ into } \textcircled{3} \quad x + 4y = 230$$

$$\textcircled{1} \quad x + y = 185$$

$$\frac{3y}{3} = \frac{45}{3}$$

$$y = 15$$

Sub $y = 15$ into $\textcircled{1}$

$$x + y = 185$$

$$x + 15 = 185$$

$$x = 185 - 15$$

$$x = 170$$

\therefore The hovercraft traveled 170 km on land and 15 km on water

#4.

	d	s	t
Run	10x	10	x
Walk	6(x-1)	6	x-1
total	42	X	

$y = x - 1$ Replace y with (x-1)

$$\textcircled{1} \quad x - y = 1 \text{ or } y = x - 1$$

$$\textcircled{2} \quad 10x + 6(x-1) = 42$$

$$10x + 6x - 6 = 42$$

$$\frac{16x}{16} = \frac{48}{16}$$

$$x = 3$$

Sub $x = 3$ into $\textcircled{1}$

$$x - y = 1$$

$$3 - y = 1$$

$$3 - 1 = y$$

$$y = 2$$

\therefore it took Amy 5h to finish the marathon.

#5

	d	v	t
up	4x	4	x
down	12y	12	y
total	0	X	10

Distance
back to start = 0

$$t = \frac{d}{v}$$

$$\textcircled{1} \quad x + y = 10$$

$$\textcircled{2} \quad 4x - 12y = 0$$

$$4(-y + 10) - 12y = 0$$

$$-4y + 40 - 12y = 0$$

$$\frac{-16y}{-16} = \frac{-40}{-16}$$

$$y = 2.5$$

Sub $y = 2.5$ into $\textcircled{1}$

$$x + y = 10$$

$$x + 2.5 = 10$$

$$x = 10 - 2.5$$

$$x = 7.5$$

\therefore they went 30 km
upstream.

#4.

	d	s	t
wind	600	$p + w$	2
against	600	$p - w$	3
total	600	X	5



$$v = \frac{d}{t}$$

$$\textcircled{1} \quad (p + w) = 600/2 \rightarrow p + w = 300$$

$$\textcircled{2} \quad (p - w) = 600/3 \quad + \quad p - w = 200$$

$$\frac{2p}{2} = \frac{500}{2}$$

$$p = 250$$

Sub $p = 250$ into $\textcircled{1}$

$$p + w = 300$$

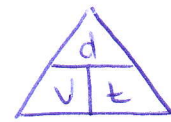
$$w = 300 - 250$$

$$w = 50$$

#7.

	d	v	t
Martin	$80x$	80	x
Lesley	$100(x-2)$	100	$x-2$
total		x	

equations equal each other [meet]



$$d = v \times t$$

$$80x = 100(x-2)$$

$$80x = 100x - 200$$

$$80x - 100x = -200$$

$$\frac{-20x}{-20} = \frac{-200}{-20}$$

$$x = 10$$

$$\text{Sub } x = 10 \text{ @}$$

$$\begin{aligned} d &= 80x \\ &= 80(10) \\ &= 800 \end{aligned}$$

\therefore Lesley will pass Martin at the 800km mark.